WHAT IS CLAIMED IS:

1. A fuel tank comprising two or more sections bonded together with an adhesive which bonds to low energy surface materials.

2. The fuel tank of Claim 1 which is made of a thermoplastic or thermosetting polymer.

3. The fuel tank of Claim 1 wherein the fuel tank is a mono layer low energy surface material or a multilayer structure comprising a core layer of a fuel barrier polymer and outer layers of a low energy surface material.

4. The fuel tank of Claim 3 wherein the low energy surface material is high density polyethylene and the fuel barrier polymer is selected from the group consisting of polyamides, fluoroelastomers, polyacetal homopolymers and copolymers, sulfonated and fluorinated HDPE, ethylene vinyl alcohol polymers and copolymers, hydroxy-functionalized polyethers and polyesters, and branched polyesters.

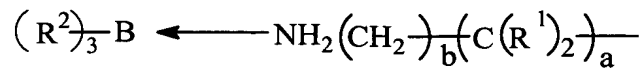
5. The fuel tank of Claim 1 wherein the adhesive can support a load of 1334 Newtons.

6. The fuel tank of Claim 1 wherein the adhesive has a fuel vapor permeation rate of not more than 46 g-mm/m^2/day as determined by ASTM E 96 - 94.

7. The fuel tank of Claim 1 wherein the adhesive comprises an amine/organoborane complex.

8. The fuel tank of Claim 7 wherein the organoborane is a trialkyl borane or alkyl cycloalkyl borane and the amine is selected from the group consisting of (1) amines having an amidine structural component; (2) aliphatic heterocycles having at least one nitrogen in the heterocyclic ring wherein the heterocyclic compound may also contain one or more nitrogen atoms, oxygen atoms, sulfur atoms, or double bonds in the heterocycle; (3) primary amines which in addition have one or more hydrogen bond accepting groups wherein there are at least two carbon atoms, preferably at least three carbon atoms, between the primary amine and the hydrogen bond accepting group, such that due to inter- or intramolecular interactions within the complex the strength of the B-N bond is increased; and (4) conjugated imines.

9. The fuel tank of Claim 7 wherein the complex of the organoborane and the primary amine corresponds to the formula



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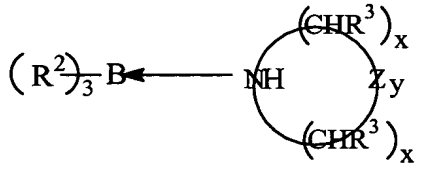
the organoborane heterocyclic amine complex corresponds to the formula



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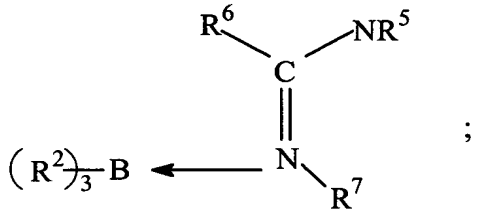
the organoborane amidine complex corresponds to the formula



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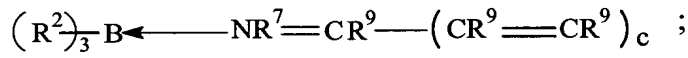
and the organoborane conjugated imine complex corresponds to the formula



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wherein B is boron; R^1 is separately in each occurrence hydrogen, a C_{1-10} alkyl or C_{3-10} cycloalkyl; R^2 is separately in each occurrence a C_{1-10} alkyl, C_{3-10} cycloalkyl or two or more of R^2 may combine to form a cycloaliphatic ring structure; R^3 is separately in each occurrence hydrogen, a C_{1-10} alkyl or C_{3-10} cycloalkyl; R^4 is separately in each occurrence hydrogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, C_{6-10} aryl or alkaryl; R^5 , R^6, and R^7 are separately in each occurrence hydrogen, C_{1-10} alkyl, C_{3-10} cycloalkyl, or two or more of R^5, R^6 and R^7 in any combination can combine to form a ring structure which can be a single ring or a multiple ring structure and the ring structure can include one or more of nitrogen, oxygen or unsaturation in the ring structure; R^9 is independently in each occurrence hydrogen, C_{1-10} alkyl or C_{3-10} cycloalkyl, Y, $-(C(R^9)_2-(CR^9=CR^9)_c-Y$ or two or more of R^9 can combine to

form a ring structure, or one or more of R^9 can form a ring structure with Y provided the ring structure is conjugated with respect to the double bond of the imine nitrogen; X is a hydrogen-bond accepting group with the proviso that where the hydrogen bond accepting group is an amine it must be secondary or tertiary; Y is independently in each occurrence hydrogen, $N(R^4)_2$, OR^4, $C(O)OR^4$, a halogen or an alkylene group which forms a cyclic ring with R^7 or R^9; Z is separately in each occurrence oxygen or $-NR^4$; a is separately in each occurrence an integer of from 1 to 10; b is separately in each occurrence 0 or 1, with the proviso that the sum of a and b should be from 2 to 10; c is separately in each occurrence an integer of from 1 to 10; x is separately in each occurrence an integer of 1 to 10, with the proviso that the total of all occurrences of x is from 2 to 10; and y is separately in each occurrence 0 or 1.

10. The fuel tank of Claim 7 wherein the organo borane/amine complex comprises an aliphatic heterocylic amine which is a five or six membered heterocylic compound.

11. The fuel tank of Claim 7 wherein the organo borane compound of the complex has three ligands selected from C_{1-10} alkyl groups or phenyl groups, and the amine compound is selected from 1,6 diaminohexane, diethylamine, dibutylamine, diethylenetriamine, dipropylenediamine, 1,3 propylene diamine, and 1,2 propylene diamine.

12. The fuel tank of Claim 7 wherein the organoborane compound of the complex has three ligands attached to the borane atom and which are selected from C_{1-10} alkyl groups and phenyl and the amine compound is an alkanol amine or a diamine wherein the first amine group is a primary or secondary amine and the second amine is a primary amine.

13. The fuel tank of Claim 7 wherein the amine compound of the complex is a polyoxyalkylene polyamine or a polyamine which is the reaction product of a diprimary amine and a compound having at least two groups which react with a primary amine.

14. The fuel tank of Claim 1 wherein the two or more parts are in the form of clam shells.

15. The fuel tank of Claim 14 wherein the clam shells are made of thermoplastic material and formed by extrusion blow molding, injection molding, thermoforming or compression molding.

16. A metal fuel tank comprising two or more parts bonded together with an adhesive.

17. The fuel tank of Claim 16 wherein the fuel tank is made of stainless steel, pre-coated low-carbon steel, or post-coated low-carbon steel, aluminum, bronze, electroplated zinc, nickel or galvanneal.

18. The fuel tank of Claim 16 wherein the adhesive comprises a polyurethane-, epoxy-, polyimide-, phenolic/resorcinolic-, or acrylate-based adhesive.

19. The fuel tank of Claim 16 wherein the two or more parts are in the form of clam shells.

20. The fuel tank of Claim 19 wherein the clam shells are made of steel and are formed by stamping or hydroforming.

21. A fuel tank assembly comprising a fuel tank and fuel tank component(s) joined to the fuel tank by means of an adhesive.

22. The fuel tank assembly of Claim 21 wherein the fuel tank component is a fill spud, vent valve, access cover, fuel line, fuel pump, fuel cut-off valve, fuel level gauge, clip, cam lock or fuel sender, roll-over valve, heat shield.

23. The fuel tank assembly of Claim 21 wherein the fuel tank and fuel tank components are made of thermoplastic or thermosetting polymers or steel.

24. The fuel tank assembly of Claim 23 wherein the steel is stainless steel, pre-coated low-carbon steel, or post-coated low-carbon steel, and the thermoplastic or thermosetting polymer is polyoxymethylene, nylon, polyethylene, polyethyleneterephthalate, polytetrafluoroethylene, polyvinylidene fluoride, polyvinylidene chloride, ethylene vinyl alcohol or polypropylene.

25. The fuel tank assembly of Claim 23 wherein the fuel tank is co-extrusion blow-molded and the fuel tank components are joined to the external or internal surface of the fuel tank.

26. The fuel tank assembly of Claim 21 further comprising a primary seal applied at the joint between the fuel tank and the fuel tank component(s) and a redundant seal applied around the primary seal.

27. The fuel tank assembly of Claim 21 wherein the fuel tank and fuel tank components are coated with a vapor phase plasma type coating.

28. The fuel tank assembly of Claim 27 wherein the plasma coating is applied on the internal or external surface of the fuel tank.

29. A fuel tank assembly comprising a plastic fuel tank having a wall with an outer surface and an inner surface, a single or multi-walled thermoplastic or metal component having a first open end and a second open end, the first open end extending outwardly through an opening in the tank wall, and the second open end extending inwardly into the tank until it is in contact with the periphery of the tank wall opening and bonded thereto by an adhesive.

30. A fuel tank assembly comprising (1) a plastic fuel tank having a wall with an outwardly extending cylindrical opening and comprising a multilayer structure having inner and outer layers of low energy surface materials and a fuel barrier layer therebetween and (2) plastic component(s) attached or joined to the fuel tank wall along the periphery of the fuel tank wall opening by means of an adhesive having adequate structural strength, fuel resistance, sealing, and vapor emission properties, the plastic component comprising a multilayer structure having thermoplastic inner and outer layers and a fuel barrier layer therebetween, the adhesive contacting the barrier layers of the plastic component and the plastic fuel tank and bridging the gap between the barrier layers of the fuel tank and the plastic components to provide a continuous barrier to fuel vapor emission from the joint between the fuel tank and the plastic components.

31. A method for preparing a fuel tank assembly which comprises providing a fuel tank and attaching fuel tank components to the internal or external surface of the fuel tank by means of an adhesive.

32. The method of Claim 31 wherein the surfaces of the fuel tank and fuel tank components are preatreated by corona, silane, plasma, flame, primer, coating, or cleaned with solvent, water or water and soap for adequate bonding.

33. The method of Claim 31 wherein the surfaces of the fuel tank and fuel tank components are sanded, sandblasted, or abraided for adequate bonding.

34. A method for joining a plastic component having a surface to be joined to a surface of a plastic fuel tank which comprises coating one or both surfaces with the adhesive described in Claim 1, pressing the two coated surfaces together to form a joint and allowing the adhesive to cure to bond the two surfaces together.

35. The method of Claim 34 wherein the joint is designed to shift failure mode of joint to shear to increase joint strength.

36. The method of Claim 34 wherein the joint is designed to create tortuous paths to minimize fuel vapor emission.

37. A method for joining a component to a fuel tank which comprises (1) providing a fuel tank having a wall with an outer surface and an inner surface, the wall having an opening therethrough, and a single or multi-walled component having a first open end and a second open end, the second open end provided with an attaching element or an interference fit, (2) applying an adhesive either to the periphery of the tank wall opening or to the attaching element of the component, and (3) pushing the second open end of the plastic component into the fuel tank through the tank wall opening until it is in engagement with the periphery of the tank wall opening and bonded thereto by the adhesive.

38. The method of Claim 37 wherein the attaching element is a clip, clamp or nut and bolt.